Texas (Cotton) Root Rot

Texas root rot (*Phymatotrichopsis omnivora*, previously named *Phymatotrichum omnivorum*), also known as cotton root rot, occurs throughout the southwestern United States and Mexico. It is present in the Verde Valley often on fruit and nut trees and grape vines, and is fatal to the host plant.

Infected plants often wilt suddenly during the summer when temperatures are high. The dead or dying leaves usually remain attached to the plant. After the plant has died, the root system is decayed and brown. Texas root rot is diagnosed by looking for fungal strands that are visible on the outer surfaces of the roots and under the root bark. Fungal spore mats may or may not be present on the soil surface near the infected plant. The mats appear off-white or tan and are level with the soil surface. These spores are not fertile and will not spread the disease.

Texas root rot, a confirmed pathogen of over 2,300 plant species, most often shows a preference for fruit trees and broadleaf deciduous trees and shrubs. Infected fruit trees are most often noticed because fruit crops are monitored during the growing season. It could also spread more easily in an orchard or vineyard because plants are usually closely planted.

Texas root rot spreads by interwoven masses of fungal hyphae known as mycelia which colonize healthy root tissue. Once strands grow and colonize roots of a susceptible plant, the infection results in wilting and plant death. There is no evidence to suggest that it can be carried to new sites by human activity or vehicles. It is in certain areas and stays there.

Native trees with some tolerance to Texas root rot are mesquite, sycamore, desert willow, hackberry, as well as Gymnosperms, such as pine, spruce, cypress, and juniper. Interestingly enough, the only fruit that appears to have some tolerance is the pomegranate. Monocots (agaves, yuccas, grasses, palms, yuccas, bamboo, iris, lilies, gladiolus, onions, garlic, etc.) are totally resistant to Texas root rot.

There are no known effective control measures. There is no test to determine the presence of Texas root rot in soil other than a dead plant that has been diagnosed by a trained individual. In other words, you can plant susceptible species and wait for them to display symptoms. Other root rots can display similar symptoms, so it is important to have the disease diagnosed by a knowledgeable person. While no reliable treatments are currently available, researchers are conducting experimental trials with soil applied fungicides.

To sample a plant for Texas root rot, collect dead roots and examine them under a dissecting microscope. If you suspect a plant has died from Texas root rot, collect several samples of rotting and discolored roots on which the outer or cortical tissue still remains attached. The samples should be pencil size or slightly larger and at least 6 inches long. Leave soil attached and keep the roots cool in a plastic bag (refrigeration is fine). Do not add water or wet paper towels. Bring the sample to one of the Yavapai County University of Arizona Cooperative Extension Offices.

Once a diagnosis has been made, remove the infected plant(s) and wait a full growing season before replanting. Resistant species make the best choices, but just as humans repopulate known flood plains following the floods, we will continue to replant susceptible species where we have had recent bouts with Texas root rot. Be sure to inspect suspected cases for other causes of similar symptoms such as gophers, chemicals, mechanical damage, or other root diseases.

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Adapted from original Backyard Gardener publications by Jeff Schalau, Agent, Agriculture & Natural Resources,
University of Arizona Cooperative Extension, Yavapai County